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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,684	09/26/2003	David H. Koch	50618-0103	9242

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EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/672,684	Applicant(s) KOCH, DAVID H.	
	Examiner Ana M. Fortuna	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “potted end cap disposed **within each of said first and second end fittings**” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Note that the potted ends are “within the housing 12”, the potting element is not within the fitting elements (Fig. 1)).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-3, 5, 18, 27, 28, 29, 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schucker et al (US 5,169,530) in view of McEvoy (US 6,645,381). Schucker et al discloses a hollow fiber membrane module including a housing ((5), a potted end cap(s) disposed within a perforated vessel (4), at least one membrane bundle (column 5, lines 30-40, Fig. 1-3); the membrane bundle is couple to an inlet in communication with a central mandrel (or support column (4)) (see abstract, column 1, lines 50-68, column 2, lines 1-68 and column 3, lines 1-2; column 5, lines 60 through column 6, lines 54). Schucker et al lack the housing with the fitting elements as claimed in the present invention; conventional housing with inlet and outlets are inherently part of the membrane module (see column 6, lines 19-54, and figures (discussed above)).

McEvoy teaches a filter housing containing hollow fiber membrane modules potted at the ends, and provided within a housing including fitting means (elements 15, 11, 20, column 1, lines 14-20, and last paragraph through column 2, line 1). The fitting elements (15) (equivalent to element 14, 16 of the present application) are suggested for allowing replacement of the at least one membrane module, or cartridge from multiple arrangements of filter cartridges (see Fig. 1, column 2, lines 31-55, column 3, lines 48-68, column 4, lines 1-5, and 32-39). It would have been obvious to one skilled in this art at the time this invention was made to use a housing arranged with fitting elements forming the end plate of the filter module to load the filter element of Schucker et al. The module of Schucker et al requires a central conduit in communication with the central (feed) mandrel, and lateral outlet for the permeate; the benefits suggested by McEvoy can also be transferred to the module of Schucker.

Regarding claim 18, disposing the permeate exit at the end of the module and from a permeate zone is disclosed in Schucker et al (column 6, lines 55-61).

5. Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schucker et al (US 5,169,530) in view of McEvoy (US 6,645,381), as applied to claims 1-3 above and further in view of Eckman (US 5,470,459). Schucker et al and McEvoy fail to disclose the permeate tube or exit extending between the first and second ends. Eckman teaches providing a permeate conduit between potted open ends of a hollow fiber module, e.g. for collecting permeate from both ends of the module (see Figures 1-2). It would have been obvious to one skilled in this art at the time the invention was made to arrange the permeate collection with a pipe extending between ends of the

module as suggested in Eckman for an axial arrangement of feed and permeate. The module of Schucker et al can be modified by providing a conduit concentric to the feed mandrel, as suggested by Eckman. Regarding claims 20-23, providing a section on the permeate tube to receive the permeate from the permeate chambers is also disclosed in Eckman (see permeate arrows in the figures). Shaping the openings to the permeate tube as slots, holes is not critical to the invention, it would have been obvious to one skilled in the art at the time the invention was made to shape the entrance of the permeate to a desired configuration for the same purpose of collecting the permeate.

6. Claims 4, 6-9, 11-14, 24-26, 30, 32-34, 35-37 are rejected under 35

U.S.C. 103(a) as being unpatentable over Schucker et al (US 5,169,530) in view of McEvoy (US 6,645,381), or Eckman (US 5,470,459) as applied to the claims above and further in view of Holladay (US 4,247,249). The references above fail to suggest providing a membrane bundle within the support column.

Holladay teaches arranging membrane bundles in sectors within a housing, the sectors designed in different configurations, including the configuration of Schucker et al, e.g pie configuration (Fig. 1); Schucker further modify the configuration to insert a central piper (which can be alternatively used as permeate collector or feed). Holladay further teaches arranging the bundles defining circular sectors containing membranes (Fig. 3), which include bundles not contained within the sector or column, e.g. bundle between the housing and second central column or sector. A module including solid tube defining (22) is also suggested to be potted (Fig. 2, column 1, lines 1-15, column 4, lines 9-68, and column 5, lines 1-55). It would have been obvious to one skilled in this art to

combine the teaching of Schucker et al with Holladay, for alternatively providing bundles of different configuration, arranging concentric bundles or bundles inserted within the bundle within the housing is suggested in 'Holladay, arranging the bundles e.g. a different levels and providing corresponding apertures to discharge and/or receive fluid from the bundle and to each bundle and/or to the housing seems to be within the knowledge of the skilled artisan. Regarding claim 9, see configuration of Fig. 3 of Holladay, providing alternatively a central perforated conduit as suggested in 'Schucker et al (for alternatively receiving or discharging fluid). The structure of the openings, as claimed in claims 12-14 are not critical to the structure, providing known shapes to the apertures of the central tube in Schucker for the same purpose of discharging or receiving fluid it would have been obvious to the skilled in the art. Claims 24-26, and 30-37 are combinations of the claims discussed above.

7. Claims 10, 15, 16, 17, 31 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Schucker et al (US 5,169,530) in view of McEvoy (US 6,645,381), Eckman (US 5,470,459), Holladay, as applied to claims in the paragraph above, and further in view of Maxwell et al (US 3,339,341). The references above lack the netting material (provided between the membrane module and the housing). Patent '341 teaches providing the netting material or sleeve (112)(see figures 1, 2a, 5c, column 3, lines 15-68, column 4, lines 1-1-18). It would have been obvious to one skilled in the art at the tie the invention was made to modify the bundle of Schucker et al by providing the sleeve (perforated), e.g. adjust bundle or membrane module packing density, as suggested in '341).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M. Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ana M Fortuna
Primary Examiner
Art Unit 1723

AF
February 28, 2006